



IOWA DEPARTMENT OF NATURAL RESOURCES

LEADING IOWANS IN CARING FOR OUR NATURAL RESOURCES

Introduction to the Iowa Stream Mitigation Method

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Stakeholder Informational Meeting – January 12, 2016



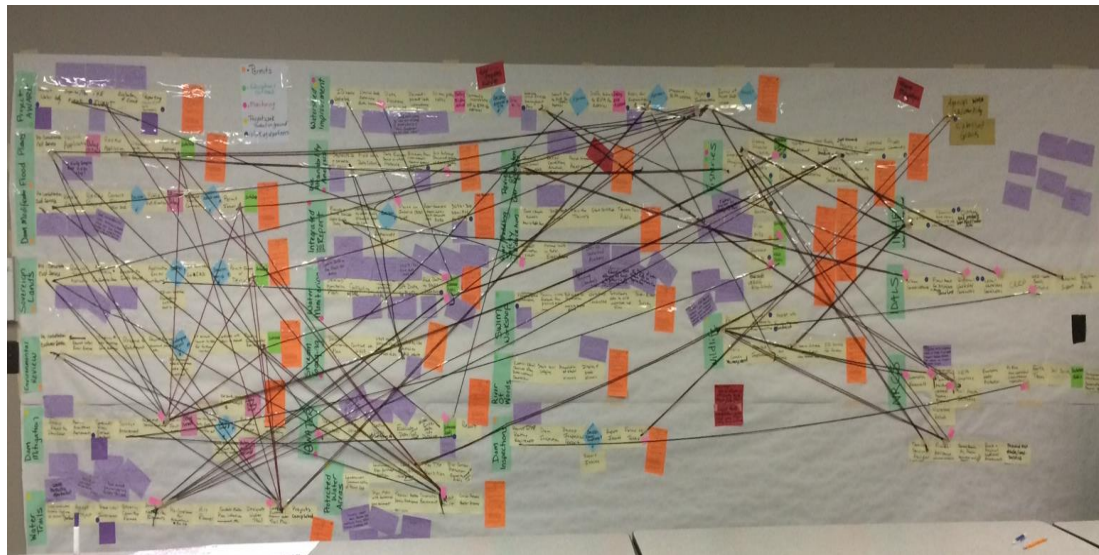
Protecting and improving Iowa's water resources

- **DNR's mission:** *To conserve and enhance our natural resources in cooperation with individuals and organizations to improve the quality of life for Iowans and ensure a legacy for future generations.*
- Streams, rivers, and riparian areas in Iowa provide **many benefits** to the state
- **Problems** caused by streams adjusting to geologic changes and human modifications include sediment pollution, loss of habitat, flooding, property loss, decreased recreational opportunities, and economic losses



DNR's Comprehensive Look at programs that impact rivers

- In February of 2015 the DNR held a 3-Day meeting for DNR program staff and partners to identify all of the areas of programs and activities that intersect with Iowa's rivers and streams.
- Identified a need for an objective way to address coordinate overall stream improvement in Iowa.



River Restoration Planning

- DNR is currently working with partners to better coordinate and increase capacity for river restoration projects
- To encourage successful restoration projects we are working to develop better tools, expand education and outreach activities, and align priorities
- Stream mitigation planning is one component of these efforts as outlined in the recently published strategy



Stream mitigation planning timeline

- **2008: Federal Compensatory Mitigation Rule** reformed the ways in which “No Net Loss” of Stream Function or Value can be accomplished.”
- **2013: Rock Island District** began discussions with **Iowa DNR** and preliminary meetings were held with the **Iowa Dept. of Transportation**
- **2014:** Iowa Rivers and Waterways Study Legislative Committee recognized the importance of river restoration efforts and recommended strategic planning, identification of best practices, and development of demonstration projects.
- **2015:** DNR established a stream mitigation planning team in consultation with the Rock Island District, the DOT, and others, and met with partners to begin development of a statewide River Restoration Strategy.

What is stream mitigation?

- Replacing lost stream function at one location with improvements somewhere else
- Anyone proposing to impact a stream or river must:

1. AVOID

2. MINIMIZE

3. MITIGATE

- If there are no alternatives to impacting a stream, then the something must be done to increase the function of a similar stream.

“No Net Loss of Function or Value.”

Who is responsible for mitigation?

Federal law allows three approaches to mitigation:

1. **BANK:** The permittee can pay for improvements that have already been constructed elsewhere
2. **IN-LIEU FEE:** ~~The permittee can pay an approved provider to do it~~
3. **PERMITTEE-RESPONSIBLE MITIGATION:** The permittee does it themselves

Currently in IOWA,

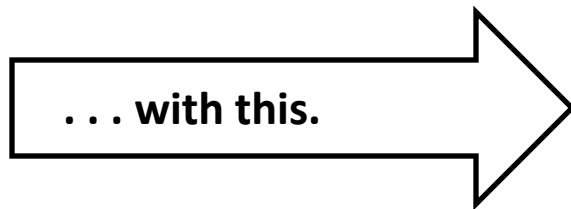
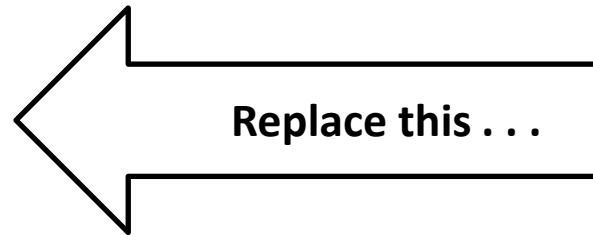
- There are some approved banks for wetlands, but not for streams
- There are no approved ILF programs
- Most mitigation is done by the permittee
- There is no systematic method for determining how much mitigation is necessary

How do we improve the process and quality of stream protection and improvement?

- A process is needed for Iowa – To be applied consistently, which can lead to:
 - More rapid review time for permitting of projects
 - Higher quality, integrated projects
 - Decreased risk to developers - the process becomes known.

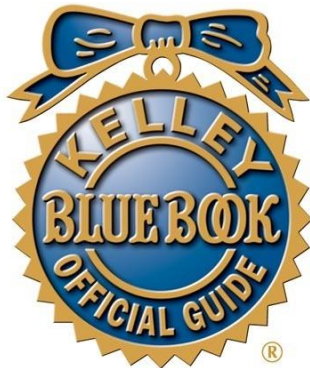
No Net Loss? How is that defined?

- You borrow your friend's red car, and damage it – all you have to do is replace it, right?

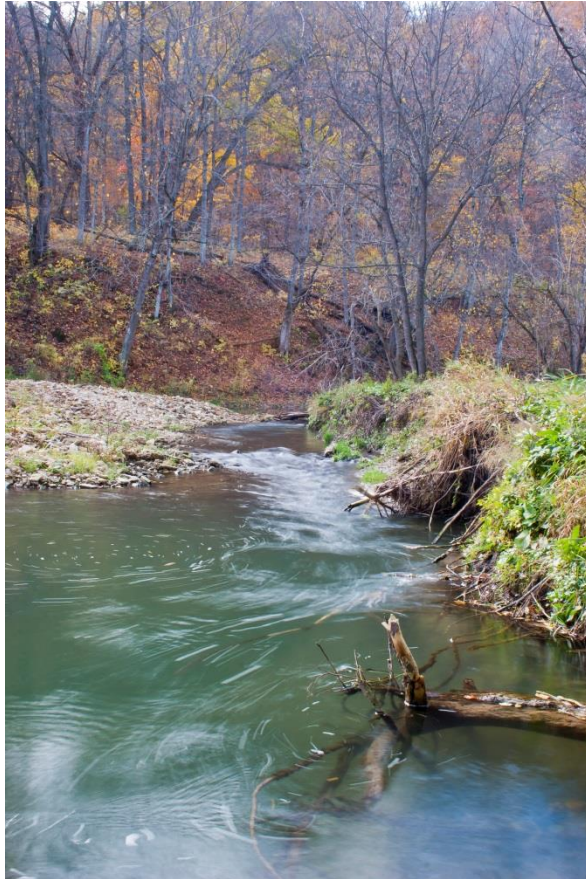


No Net Loss? Relative values?

- 2014 Audi R8 \$115,000
- 1978 Ford Pinto Runabout - \$1,325
- How do we know this?
- There is a system of establishing value.



How Do You Establish Value for streams?



- Do these have equal value?



Value is established by a “Method” or system to account for a wide range of stream elements.

- How is the amount of damage (impact) and the amount of fixing (mitigation, or “Environmental Lift”) determined? How does the Corps know how much impact is done and how much mitigation is needed?
- A systematic way of quantifying losses, and then determining if proposed mitigation is sufficient to replace the lost function.
- This system is called the Iowa Stream Mitigation Method.

**THE DRAFT IOWA STREAM
MITIGATION METHOD**

Why Should Iowa establish a method now?



- A method reduces randomness in the process.
- A method establishes predictability.
- A method provides a tool that stakeholders in Iowa can use.
- The Iowa Dept. of Transportation is asking for a method.
- Surrounding states are using some form of an established method.

Without a method, the Corps will continue to evaluate projects as it does now, without a consistent system designed for Iowa.

Other States – what do they do?

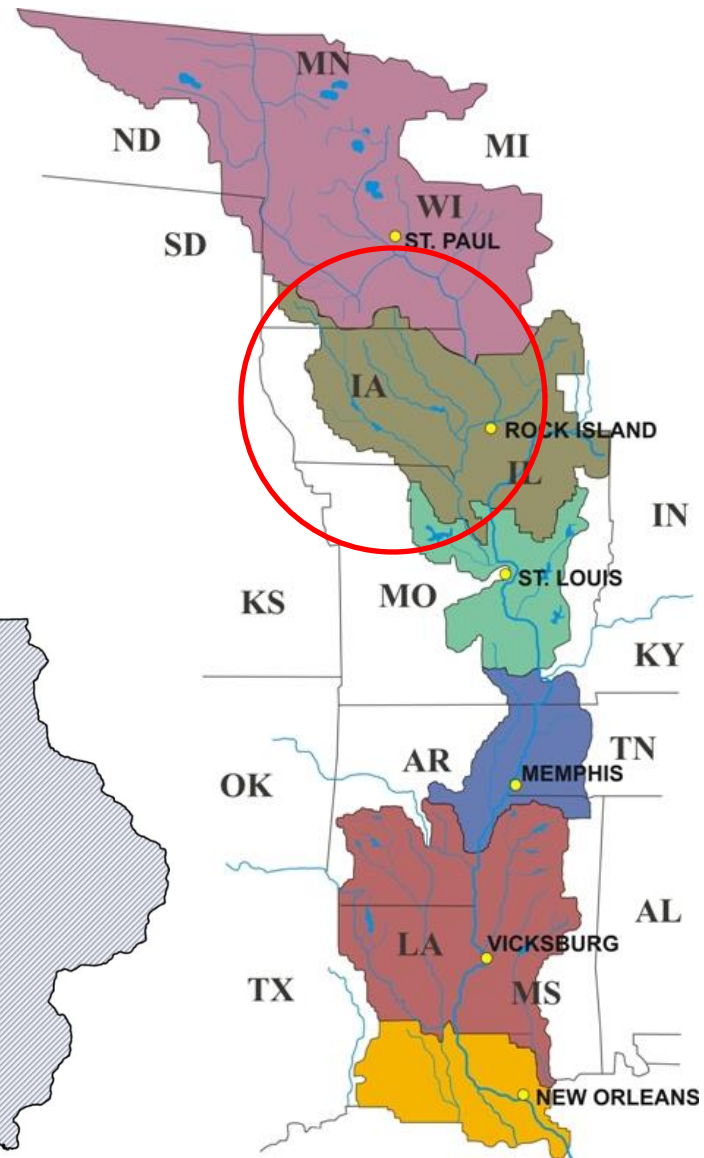
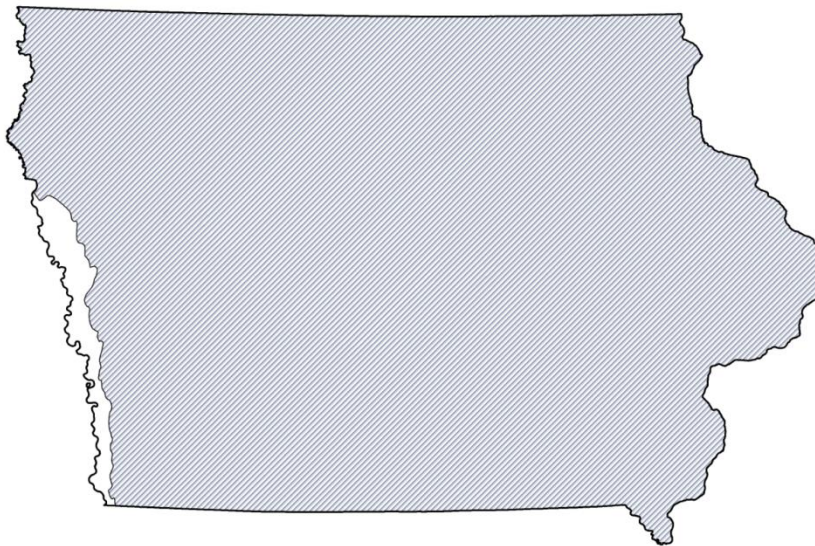


Most states around Iowa have a quantitative method of some kind.

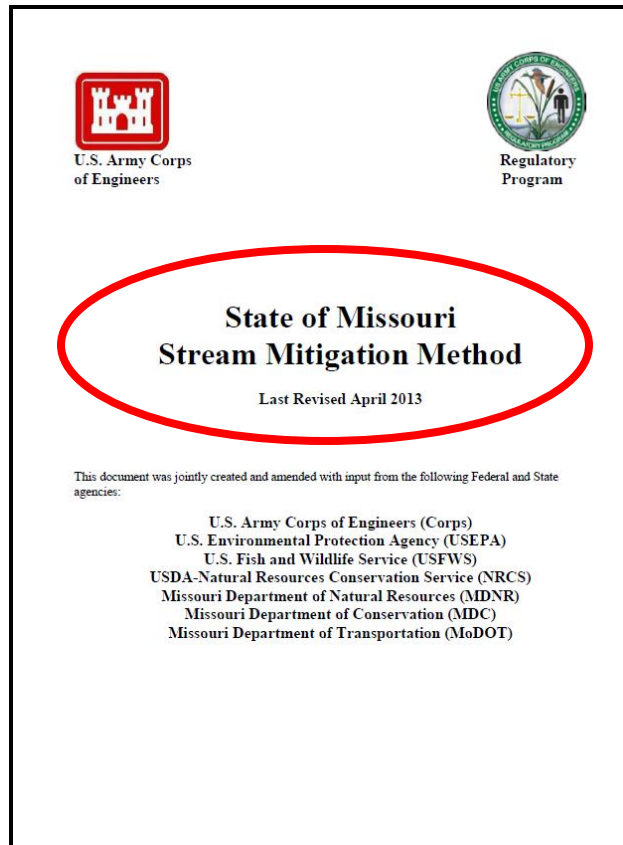
80% of the method content is consistent, from state to state, with variations made for ecoregion differences.

Where did Iowa start?

- The Rock Island Office of the Corps has jurisdiction for this program over most of the state of Iowa - and they approved the plan for the state of Missouri, so we began there.



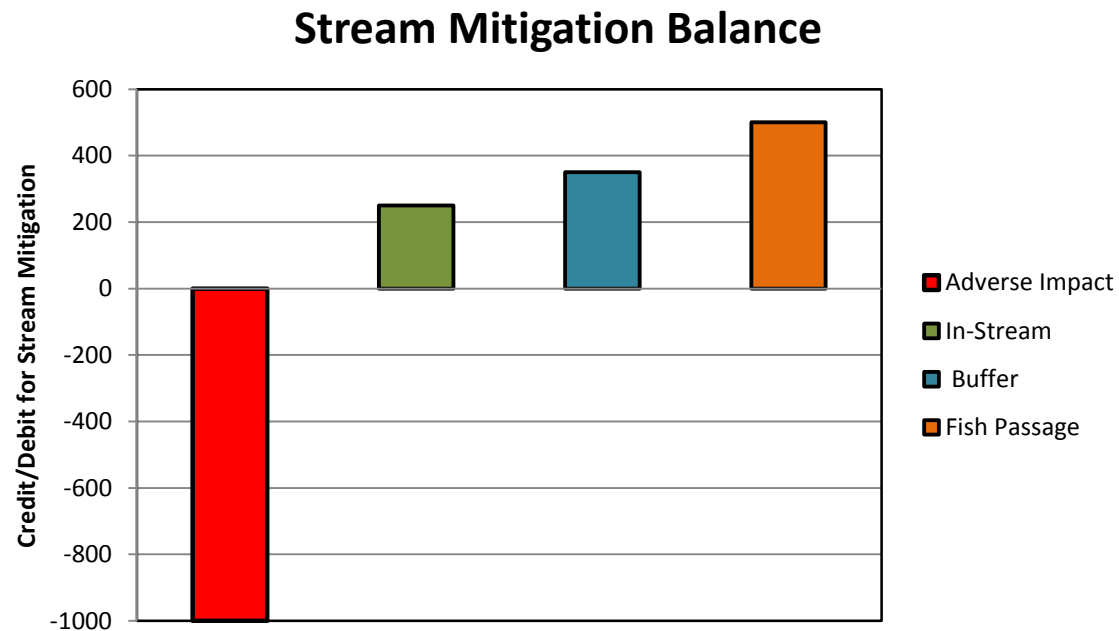
Starting Point – The Missouri Method



- The Corps requested that the DNR begin with Missouri Method, and then adapt it to better fit the conditions of Iowa.
- The Missouri Stream Mitigation Method has already been through one revision by the Corps, and represents a process that has been used, and subsequently improved as a result of experience.

What is the Method, and how does it work?

- The Iowa Method is a system of “debits” and “credits.”
- $\text{Adverse Impact} = \text{In-Stream} + \text{Buffer} + \text{Fish Passage}$



How does this really work?



An example – based on an actual project . . .

Highway Expansion Example

Adverse Impacts

- 3 stream crossings
- Total of 6000 feet of impact (28,200 debits)

Proposed Mitigation In-Stream Benefits

- Sloping back 2000 ft unstable banks (6100 credits)
- Boulder clusters (1000 ft) increase fish habitat (4150 credits)

Proposed Mitigation Riparian Buffer

- Protected low floodplain (8000 credits)
- Restored prairie in valley (11,400 credits)
- No buffer on valley walls

Adverse Impact Factors (impacts on a stream due to some activity)

I-B: ADVERSE IMPACT FACTORS WORKSHEET

B1	Stream Type	Ephemeral 0.3			Intermittent 0.4			Perennial 0.8		
B2	Priority Waters	Tertiary 0.1			Secondary 0.4			Primary 0.8		
B3	Existing Condition	Functionally Impaired 0.2			Moderately Functional 0.8			Fully Functional 1.6		
B4	Impact Duration	Temporary 0.05					Permanent 0.3			
B5	Impact Activity	Clearing 0.05	Temp. disturbance 0.15	Below grade culvert 0.3	Armor 0.5	Detention facility 0.75	Morphologic change 1.5	Impoundment 2.0	Pipe 2.2	Fill 2.5
B6	Linear Impact Calculation	0.0002 multiplied by linear feet of stream impact recorded in each column below								
B7	Compensation Ratio (CR)	Primary Service Area 1.0			Secondary Service Area 2.0			Tertiary Service Area 3.0		

Lower value to higher value.

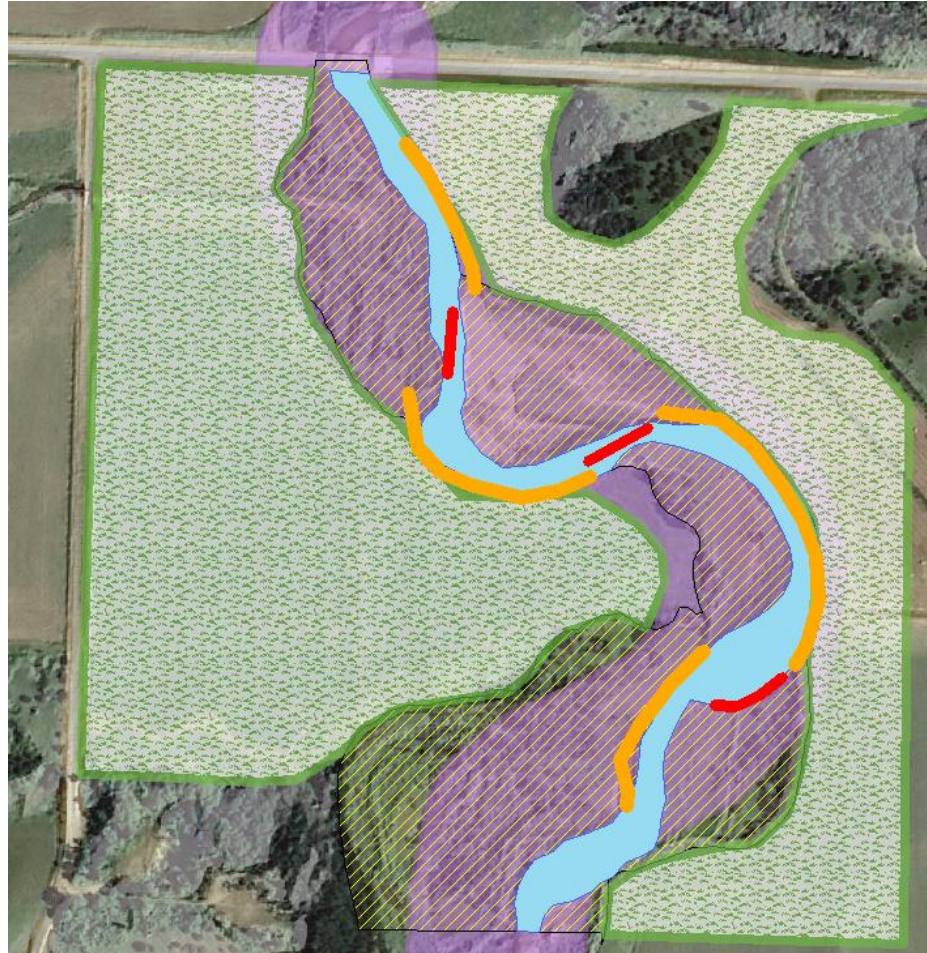
Debits Calculation: $(B1+B2+B3+B4+B5+B6) \times \text{Linear Feet of Impact} \times B7$

Stream Mitigation Calculator – Adverse Impacts

ADVERSE IMPACTS WORKSHEET						
Project Name		Highway Expansion			Date	1/1/2016
Instructions - For each stream reach, type the name/description, choose factor types from the dropdown lists provided, and input ONLY change values in the blue boxes. All scores and values will be calculated automatically.						
	Stream Reach 1		Stream Reach 2		Stream Reach 3	
Name/Description	Impact 1 - Fill		Impact 2 - Pipe		Impact 3 - Straightening/Armor	
Factor	Type	Score	Type	Score	Type	Score
Stream Type	Intermittent	0.40	Perennial	0.80	Perennial	0.80
Priority Waters	Tertiary	0.10	Tertiary	0.10	Primary	0.80
Existing Condition	Functionally Impaired	0.10	Functionally Impaired	0.10	Fully Functional	1.60
Impact Duration	Permanent	0.30	Permanent	0.30	Permanent	0.30
Impact Activity	Fill	2.50	Pipe	2.20	Morphologic Change	1.50
Linear Impact Calc.	0.0002 x LF	0.20	0.0002 x LF	0.40	0.0002 x LF	0.60
Sum of Factors (M)		3.60		3.90		5.60
Linear Feet of Impact (LF)	1000		2000		3000	
Credits Needed (C)		3600.00		7800.00		16800.00
Compensation Ratio	Primary Service Area	1.00	**Choose One**	1.00	**Choose One**	1.00
Total Credits Per Reach		3600.00		7800		16800
TOTAL MITIGATION CREDITS REQUIRED		28,200				

Proposed Mitigation

- Bank Sloping
- Boulder Clusters
- Low Floodplain Protection
- Broad Floodplain Prairie Restoration



In-Stream Credit Factors

I-C: IN-STREAM BENEFITS WORKSHEET

C1	Stream Type	Ephemeral 0.15	Intermittent 0.2	Perennial Stream 0.4	
C2	Priority Waters	Tertiary 0.05	Secondary 0.2	Primary 0.4	
C3	Net Benefit	Stream Relocation 0.5	Moderate 1.2	Good 2.4	Excellent 3.5
C4	Site Protection Bonus	No third-party grantee 0		Third-party grantee 0.2	
C5	Credit Schedule	Schedule 1 0.3	Schedule 2 0.1	Schedule 3 0	
C6	Location and Kind*	In-service-area/In-kind 1.0		Out-of-service-area/Out-of-kind 0.5	
C7	Design Process	Minimum 1.0	Stability Analysis 1.1	Full NCD Checklist 1.2	
C8	Monitoring Process	Minimum 1.0	Stability 1.1	Complete Physical & Biological 1.2	

Credits Calculation: (C1+C2+C3+C4+C5) x Linear Feet of Benefit x C6 x C7 x C8

IN-STREAM BENEFITS WORKSHEET

Project Name	Highway Expansion			Date	1/1/2016	
Instructions - For each stream reach, choose factor types from the dropdown lists provided and input linear feet of impact.						
ONLY change values in the blue boxes. All scores and values will be calculated automatically.						
			Oxbow			
	Stream Reach 1		Stream Reach 2		Stream Reach 3	
Name/Description	Bank Sloping		Boulder Clusters			
Factor	Type	Score	Type	Score	Type	Score
Stream Type	Perennial	0.40	Perennial	0.40	**Choose One**	**
Priority Waters	Tertiary	0.05	Tertiary	0.05	**Choose One**	**
Net Benefit	Good	2.40	Excellent	3.50	**Choose One**	**
Site Protection	3rd Party Grantee	0.20	3rd Party Grantee	0.20	**Choose One**	**
Credit Schedule	Schedule 3	0.00	Schedule 3	0.00	**Choose One**	**
Sum of Factors (M)		3.05		4.15		0.00
Linear Feet of Benefit (LF)	2000		1000		0	
Reach Credits Generated (RC)		6100.00		4150.00		0.00
Project Credit Subtotal		10250.00				
Location & Kind Multiplier	In-location/kind	1.00				
Design Process Multiplier	A - Minimum	1.00				
Monitoring Process Multiplier	A - Minimum	1.00				
TOTAL MITIGATION CREDITS EARNED		10,250				

Riparian Buffer Factors

I-D: RIPARIAN BUFFER WORKSHEET

D1	Net Benefit Factor	Riparian Restoration/ Establishment 1.2	Enhancement 0.8		Preservation 0.5	
D2	Function Factor	4× Bankfull Width 1.2	Broad Floodplain 0.5		Valley Sides - 0.6	
D3	Site Protection	No third-party grantee 0			Third-party grantee 0.2	
D4	Credit Schedule	Schedule 1 0.15		Schedule 2 0.05		Schedule 3 0
D5	Temporal Lag	Over 20 years - 0.3	10 to 20 years - 0.2	5 to 10 years - 0.1		0 to 5 years 0
D6	Buffer Area	Measured in square feet (digital measurements preferred)				
D7	Location and Kind*	In-service-area/In-kind 1.0			Out-of-service-area/Out-of-kind 0.5	

Credits Calculation: (D1+D2+D3+D4+D5) x Square Feet of Buffer x 0.002 x D7

RIPARIAN BUFFER WORKSHEET

Project Name Highway Expansion **Date** 1/1/2016

Instructions - For each stream reach, enter dimensions of buffers and choose factor types from the dropdown lists provided.

ONLY change values in the blue boxes. All scores and values will be calculated automatically.

	Buffer Area 1		Buffer Area 2	
Name/Description	Protect Low Floodplain		Broad Floodplain	
Buffer Dimensions (for info only)	all measurements in feet		all measurements in feet	
Average width of buffer (side A)	160		300	
Average width of buffer (side B)	160		180	
Stream length	6250		6250	
Calculated Buffer Area (sq ft)	2000000		3000000	
Factor	Type	Score	Type	Score
Net Benefit	C) Buffer Preservation	0.60	A) Buffer Restoration/Establishment	1.20
Functional Zone	A - Up to 4x Bankfull Width	1.20	B - Broad Floodplain	0.50
Site Protection	3rd Party Grantee	0.20	3rd Party Grantee	0.20
Credit Schedule	Schedule 3	0.00	Schedule 3	0.00
Temporal Lag Factor	A) 0 to 5 years	0.00	A) 0 to 5 years	0.00
Sum of Factors		2.00		1.90
Buffer area in square feet		2000000		3000000
Buffer Credit Subtotal		8000.00		11400.00
Location and Kind Factor	Within HUC8	1.00	Within HUC8	1.00
Credits Generated		8000.00		11400.00
Additional comments or description:	46 acres		69 acres	
	TOTAL MITIGATION CREDITS EARNED	19,400		

Highway Expansion Example Summary

Adverse Impacts

- 3 stream crossings
- Total of 6000 feet of impact (28,200 debits)

Proposed Mitigation In-Stream Benefits

- Sloping back 2000 ft unstable banks (6100 credits)
- Boulder clusters (1000 ft) increase fish habitat (4150 credits)

Proposed Mitigation 150 acres of Riparian Buffer

- Protected low floodplain (8000 credits)
- Restored prairie in valley (11,400 credits)
- No buffer on valley walls

Debits (28,200) Credits (29,650)

Fish Passage

DAM MITIGATION/FISH PASSAGE BENEFITS WORKSHEET

Project Name	Highway Expansion	Date	1/1/2016
Instructions - Choose the "Benefit Multiplier" from the Fish Passage Table and input the miles of stream benefitted.			
ONLY change values in the blue boxes. All scores and values will be calculated automatically.			
For fish barrier structures that are not pre-scored, the value is assumed to be .1 unless supplemental data can is supplied.			
The maximum number of linear miles that can be used for credit is 500.			
E1. Benefit Multiplier	1.00		
E2. Linear Miles of Perennial Upstream (Maximum 500)	500.00		
TOTAL MITIGATION CREDITS EARNED	50,000.00		

Who has to do these improvements?

1. The permittee can pay for improvements that have already been constructed elsewhere (Bank) – [where available.]
2. The permittee can pay an in-lieu fee provider to do it – [where available.]
3. The permittee can do it.

These are in order of Corps/EPA preference.

Most preferred to least preferred.

An important distinction.

- An In-Lieu Fee program needs the Iowa Method, but the Iowa Method does not need an In-Lieu Fee program.
- The same holds true for a stream mitigation Bank.
- The DNR is beginning the process of looking at establishing an In-Lieu Fee program, but that process is separate from the establishment of the Iowa Method.

CREDITS \neq \$\$\$

Timeline

- Much of the remaining approval process is a Corps process – not a DNR process. Review also involves the IRT (Interagency Review Team) made up of the Corps, EPA, U.S. Fish and Wildlife Service, Natural Resources Conservation Service, and Iowa DNR.
 - Draft Iowa Method provided to the Corps: January 2016.
 - DNR Overview for Key Stakeholders: January 2016
 - We want stakeholder feedback by Feb. 15 to be provided to the IRT. DNR will coordinate and submit suggested changes by March 1.
 - The IRT edits and reviews – approximately 6 – 8 months (taking informal input from stakeholders during the process).
 - Corps Public Formal Comment Period – 30 days (Fall/Winter 2016).
 - Corps/Users “Testing Period” – Spring/Summer 2017
 - The Iowa Method is approved by Corps – possibly by Fall 2017.

Feedback

- Although DNR will not be holding public hearings or taking public comments (the Corps will assume this role) . . .
- We do you want your feedback. We can provide feedback to the IRT.
- Are there any critical flaws with the Iowa Method?
- What are we missing?
- What needs clarification?
- What can we do to make it easier to use?
- Documents available on the DNR website:
www.iowadnr.com/riverrestoration



Other Activities

- DNR is working in the following areas:
 - Investigation of issues related to the development of an In-Lieu Fee program based on the Iowa Method. An In-Lieu Fee program would not launch at the same time as the Iowa Method is adopted.
 - Preparing elements of a River Restoration Toolbox – Best Practices, Technical Resources, Funding options, assessment protocols, training materials, etc.
 - Continuation of River Restoration Program Planning – working with partners.



Questions??

Contacts

- Technical Questions (the Iowa Method)
 - Claire Hruby, (515) 725-8348 Claire.Hruby@dnr.iowa.gov
- Permit Questions (Corps and IRT)
 - Chris Schwake (515) 725-8399 Christine.Schwake@dnr.iowa.gov
- Other Questions and contacts
 - Website: www.iowadnr.com/riverrestoration